ORDER NO. KM49810320A3

Service Manual

Simplified

Telephone Equipment

KX-TS10SP-W

Integrated Telephone System

White Version

(for Spain)

Please file and use this manual together with the Service Manual for model KX-TS10-W order No. KM49711210C1.
This Service Manual indicates the main differences between: Original KX-TS10-W and KX-TS10SP-W.

⚠ WARNING

This service information is designed for experienced repair technicians only and is not designed for use by the general public.
It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product.
Products powered by electricity should be serviced or repaired only by experienced professional technicians.
Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

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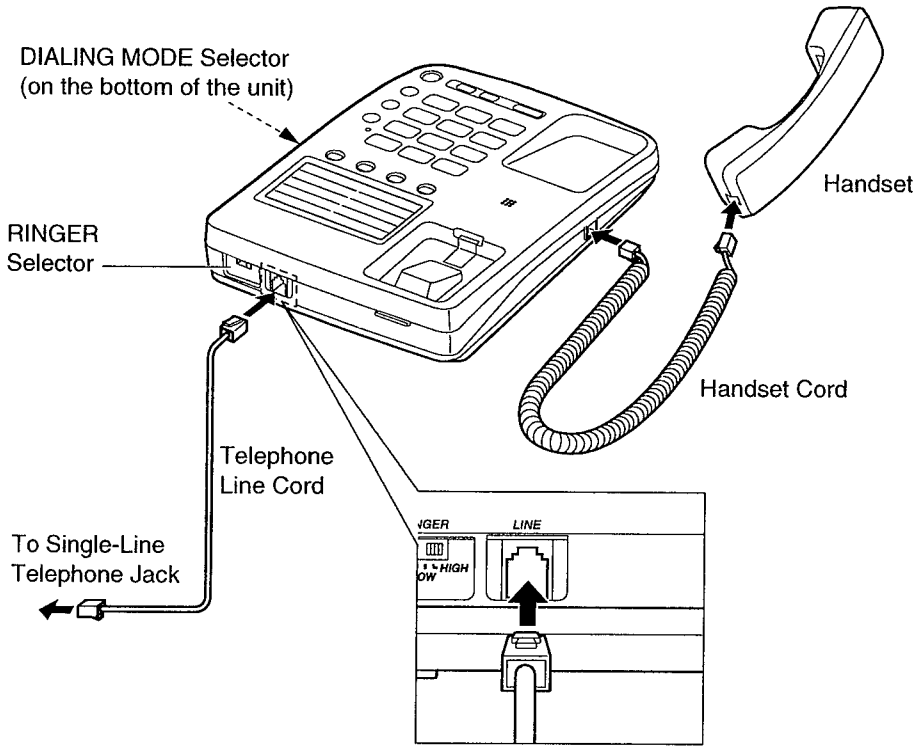
KX-TS10SP-W

■ CONNECTION [Change from original page 3]



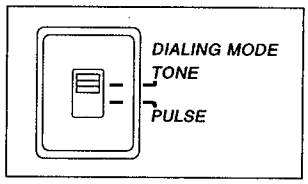
(Model KX-TS10SP-W)

1 Connect the handset cord.

2 Connect the telephone line cord, then lift the handset to confirm the dial tone.

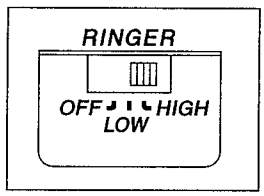
3 Set the DIALING MODE selector to TONE.

- If you cannot dial, set to PULSE.

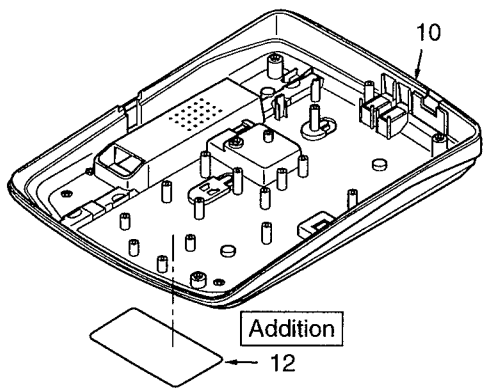


4 Set the RINGER selector to HIGH, LOW or OFF.

- When set to OFF, the unit will not ring.



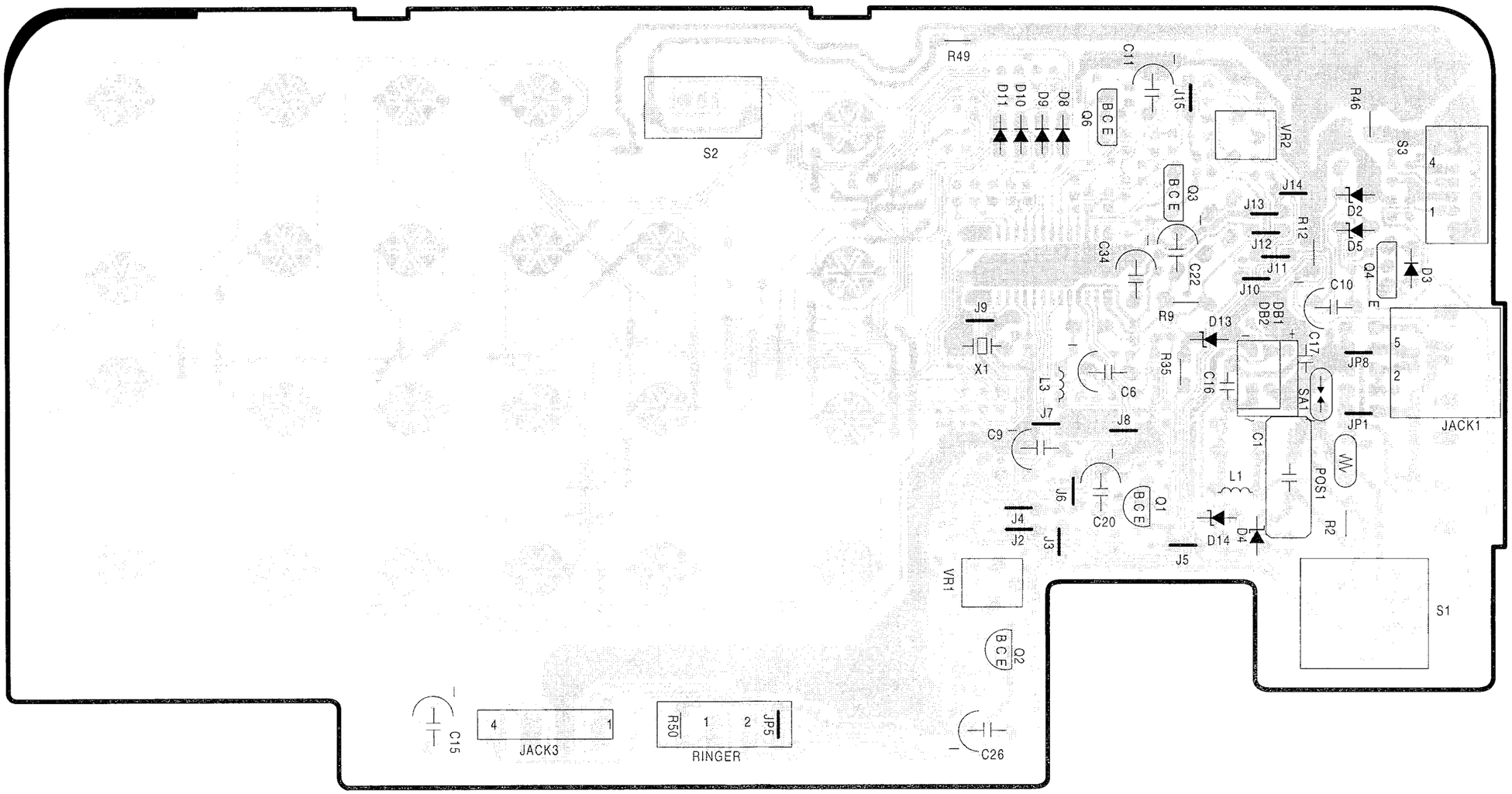
■ CABINET AND ELECTRICAL PARTS LOCATION [Change from original page 22]



(Model KX-TS10SP-W)

CIRCUIT BOARD AND WIRING CONNECTION DIAGRAM [Change from original page 14]

(Component View)

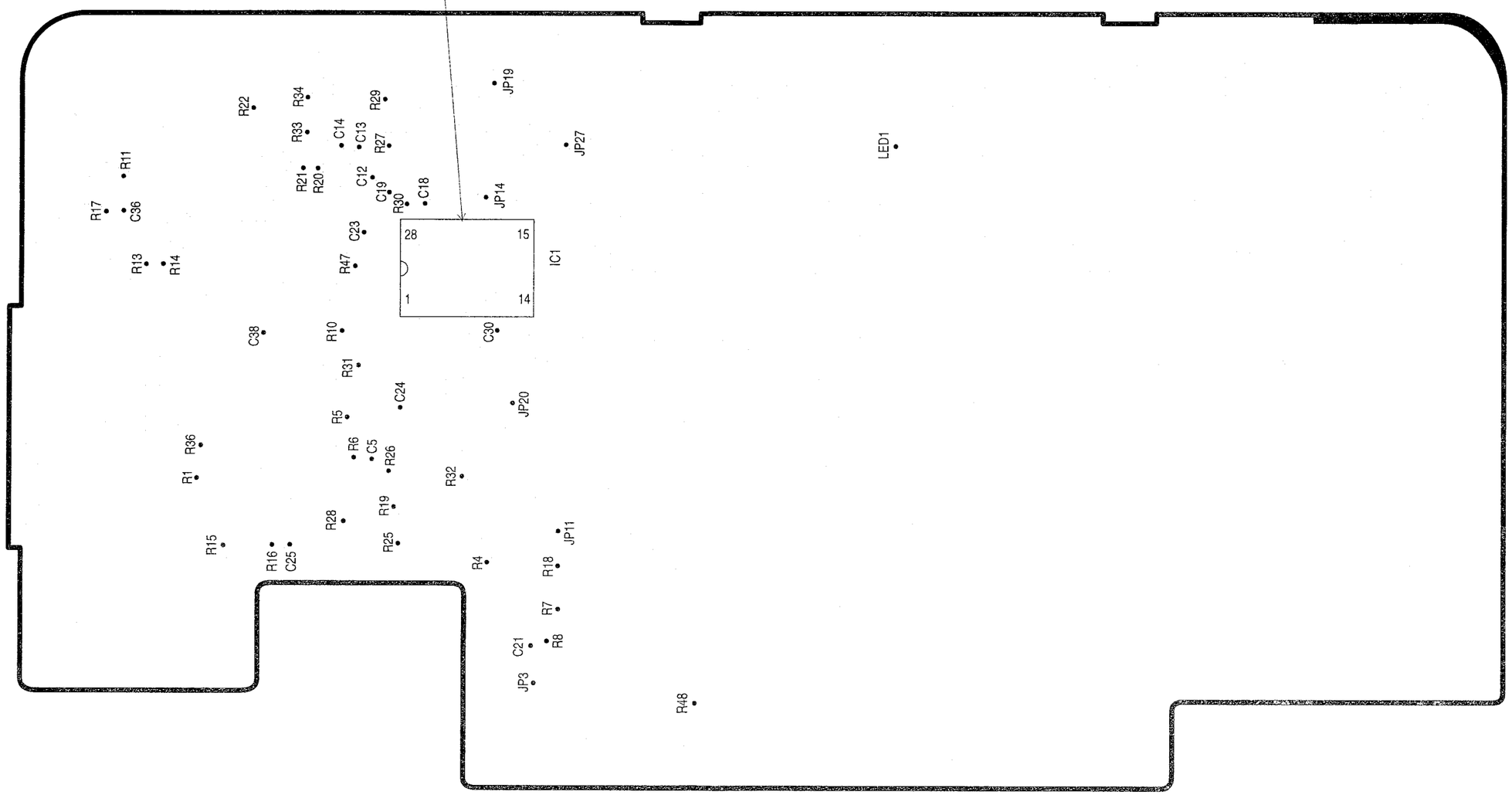


CIRCUIT BOARD AND WIRING CONNECTION DIAGRAM [Change from original page 15]

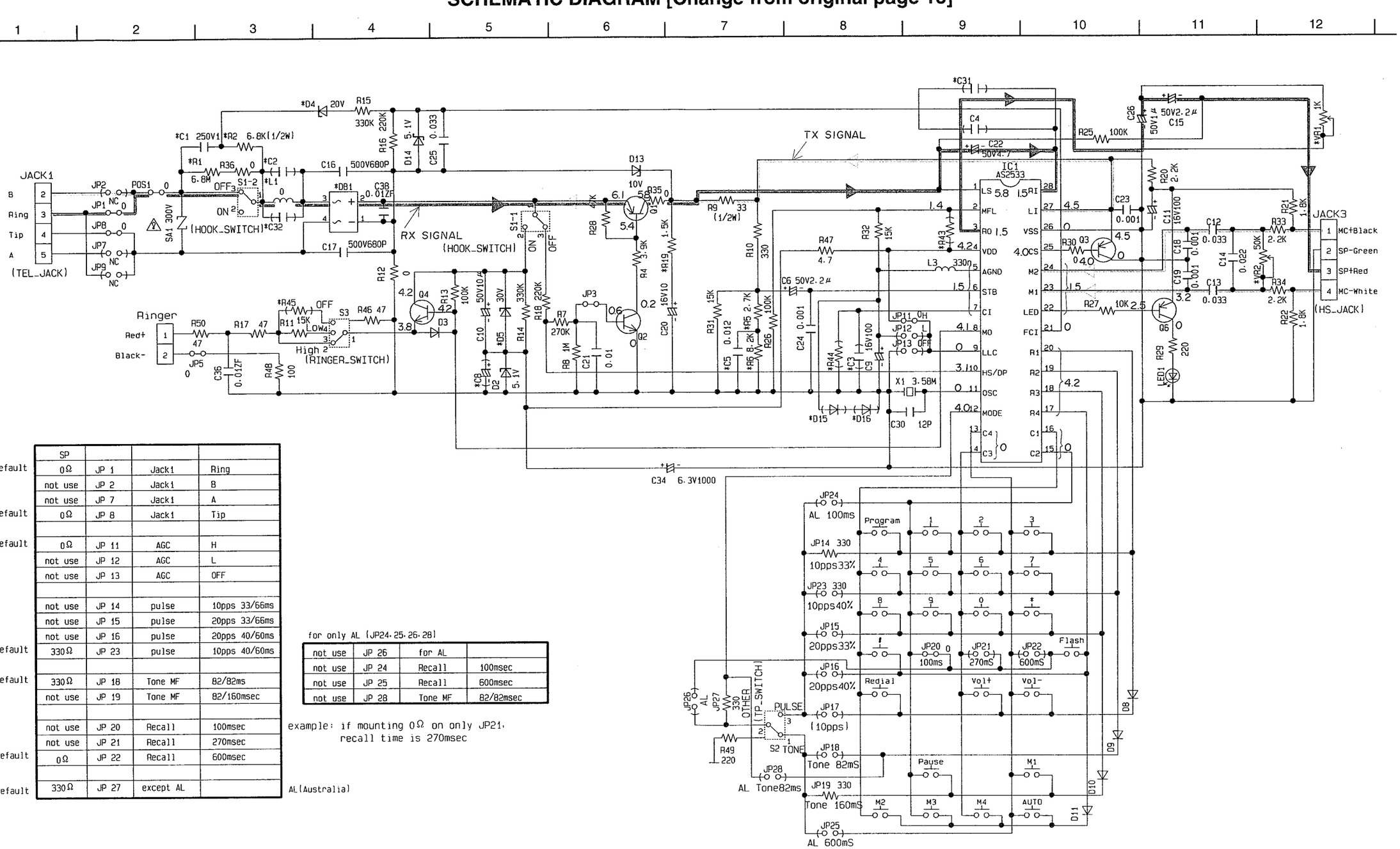
(Flow Solder Side View)

IC1 Voltage

Pin No.	Value	Pin No.	Value	Pin No.	Value
1	5.8	9	0	21	0
2	1.4	10	3.1	22 ~ 24	1.5
3	1.5	11	0	25	4
4	4.2	12	4	26	0
5 ~ 7	1.5	13 ~ 16	0	27	4.5
8	4.1	17 ~ 20	4.2	28	1.5



SCHEMATIC DIAGRAM [Change from original page 13]



default	SP			
	0Ω	JP 1	Jack1	Ring
	not use	JP 2	Jack1	B
	not use	JP 7	Jack1	A
default	0Ω	JP 8	Jack1	Tip
default	0Ω	JP 11	AGC	H
	not use	JP 12	AGC	L
	not use	JP 13	AGC	OFF
	not use	JP 14	pulse	10pps 33/66ms
	not use	JP 15	pulse	20pps 33/66ms
	not use	JP 16	pulse	20pps 40/60ms
default	330Ω	JP 23	pulse	10pps 40/60ms
default	330Ω	JP 18	Tone MF	82/82ms
	not use	JP 19	Tone MF	82/160msec
	not use	JP 20	Recall	100msec
	not use	JP 21	Recall	270msec
default	0Ω	JP 22	Recall	600msec
default	330Ω	JP 27	except AL	

for only AL (JP24.25.26.28)

not use	JP 26	for AL	
not use	JP 24	Recall	100msec
not use	JP 25	Recall	600msec
not use	JP 28	Tone MF	82/82msec

example: if mounting 0Ω on only JP21,
recall time is 270msec

AL (Australia)

Notes:

1. S1: Hook switch in "OFF-HOOK" position.
2. S2: Dialing mode selector switch in "TONE" position.
3. S3: Ringer volume selector switch in "HIGH" position.
4. DC voltage measurements are taken with electronic voltmeter from negative terminal of battery.
   (Add 40 mA to telephone line from the loop simulator.)
5. This schematic diagram may be modified at any time with the development of new technology.

6. **Important Safety Notice:**
   The shaded area on this schematic diagram incorporates special features important for protection from fire and electrical shock hazards.
   When servicing it is essential that only manufacturer's specified parts be used for the critical components in the shaded areas of the schematic.

PARTS COMPARISON TABLE [Change from original pages 24, 25]

REPLACEMENT PARTS LIST

KX-TS10SP-W

1. RTL (Retention Time Limited)

Note: The marking (RTL) indicates that the Retention Time is limited for this item. After the discontinuation of this assembly in production, the item will continue to be available for a specific period of time. The retention period of availability depends on the type of assembly and the laws govering parts and product retention. At the end of this period, the assembly will no longer be available.

2. Important safety notice

Components identified by the ⚠ mark indicates special characteristics important for safety. When replacing any of these components, only use specified manufacturer's parts.

3. The S mark indicates service standard parts and may differ from production parts.

4. RESISTORS & CAPACITORS

Unless otherwise specified;
All resistors are in ohms (Ω) K=1000Ω, M=1000KΩ
All capacitors are in MICRO FARADS (μF) P=μμF

*Type & Wattage of Resistor

Type

ERC:Solid	ERX:Metal Film	PQ4R:Carbon
ERD:Carbon	ERG:Metal Oxide	ERS:Fusible Resistor
PQRD:Carbon	ER0:Metal Film	ERF:Cement Resistor

Wattage

10,16:1/8W	14,25:1/4W	12:1/2W	1:1W	2:2W	3:3W

*Type & Voltage of Capacitor

Type

ECFD:Semi-Conductor	ECCD,ECKD,ECBT,PQCBC : Ceramic
ECQS:Styrol	ECQE,ECQV,ECQG : Polyester
PQCUV:Chip	ECEA,ECSZ : Electrolytic
ECQMS:Mica	ECQP : Polypropyene

Voltage

ECQ Type	ECQG ECQV Type	ECSZ Type	Others	
1H: 50V	05: 50V	0F:3.15V	0J :6.3V	1V :35V
2A:100V	1:100V	1A:10V	1A :10V	50,1H:50V
2E:250V	2:200V	1V:35V	1C :16V	1J :63V
2H:500V		0J:6.3V	1E,25:25V	2A :100V

Ref. No.	Part No.	Part Name & Description	Pcs/Set
		CABINET & ELECTRICAL PARTS	
1	PQBH10022Z1	BUTTON, HOOK	1
2	PQBX10291Z1	BUTTON, KEY	1
3	PQBX10295Z1	BUTTON, FLASH, VOLUME, REDIAL	1
4	PQGD10153Z	TEL CARD	1
5	PQGV10033Z	TEL CARD COVER	1
6	PQHR10581Z	LED PLATE	1
7	PQKE10069Z1	HANGER	1
8	PQKM10302S1	UPPER CABINET	1
9	PQSX10067Z	BUTTON, RUBBER	1
10	PQYF10121W1	LOWER CABINET	1
11	PQUS10233Z	SPRING	1
12	PQGT13320Z	NAME PLATE	1

Ref. No.	Part No.	Part Name & Description	Pcs/Set
		ACCESSORIES	
A 1	PQJA10075Z	TELEPHONE LINE CORD	1
A 2	PQJA212M	HANDSET CORD	1
A 3	PQQW12006Z	LEAFLET	1
A 4	PQQX12040Z	INSTRUCTION BOOK	1
H 1	PQJX2PJAL21Z	HANDSET ASS'Y	1
		PACKING MATERIALS	
P 1	PQPK12626Z	GIFT BOX	1
P 2	PQPN10611Z	INNER BOX	1
P 3	PQPP10076Z	PROTECTION COVER (for Unit)	1
P 4	PQPP34Z	PROTECTION COVER (for Handset)	1
		MAIN PRINTED CIRCUIT BOARD PARTS	
PCB1	PQWPTS10SPW	MAIN P.C.BOARD ASS'Y (RTL)	1
		(ICS)	
IC1	PQVIAS2533T	IC	1
		(TRANSISTORS)	
Q 1	2SA1626	TRANSISTOR(SI)	1
Q 2	PQVT2N6517CA	TRANSISTOR(SI)	1
Q 3	2SB1322	TRANSISTOR(SI)	1
Q 4	2SC1740S	TRANSISTOR(SI)	1
Q 6	2SA933	TRANSISTOR(SI)	1
		(DIODES)	
D 2	MA4051	DIODE(SI)	1
D 3	1SS119	DIODE(SI)	1
D 4	MA4200	DIODE(SI)	1
D 5	MA4300	DIODE(SI)	1
D 8	1SS119	DIODE(SI)	1
D 9	1SS119	DIODE(SI)	1
D10	1SS119	DIODE(SI)	1
D11	1SS119	DIODE(SI)	1
D13	MA4100	DIODE(SI)	1
D14	MA4051	DIODE(SI)	1
DB1	PQVDS1ZB40F1	DIODE(SI) S	1
LED1	PQVDSML210L	LED	1
		(COILS)	
L 3	PQLQZMR33K	COIL	1

Ref. No.	Part No.	Part Name, Description, & Value	Pcs/Set
		(JACKS)	
JACK1	PQJJ1TA15Z	JACK, LINE S	1
JACK3	PQJJ1TB2Y	JACK, TEL	1
		(SWITCHES)	
S1	PQSH2B103Z	SWITCH, HOOK	1
S2	PQSS2A103Z	SWITCH, DIALING MODE SELECTOR	1
S3	PQSS3A17W	SWITCH, RINGER SELECTOR	1
		(OTHERS)	
SA1	PQVDDSS301L	VARISTOR	1
X1	PQVBKBR3.58M	CRYSTAL OSCILLATOR	1
E1	PQEFBPKM34E1	BUZZER	1
VR1	EVNDXAA03B13	VARIABLE RESISTOR	1
VR2	EVNDXAA03B54	VARIABLE RESISTOR	1
		(RESISTORS)	
R 1	ERJ6GEYJ685	6.8M	1
R 2	ERDS1TJ682	6.8K S	1
R 4	PQ4R10XJ392	3.9K S	1
R 5	PQ4R10XJ272	2.7K S	1
R 6	PQ4R10XJ822	8.2K S	1
R 7	PQ4R10XJ274	270K S	1
R 8	PQ4R10XJ105	1M S	1
R 9	ERDS1TJ330	33 S	1
R10	PQ4R10XJ331	330 S	1
R11	PQ4R10XJ153	15K S	1
R13	PQ4R10XJ104	100K S	1
R14	PQ4R10XJ334	330K S	1
R15	PQ4R10XJ334	330K S	1
R16	PQ4R10XJ224	220K S	1
R17	PQ4R10XJ470	47 S	1
R18	PQ4R10XJ224	220K S	1
R19	PQ4R10XJ152	1.5K S	1
R20	PQ4R10XJ222	2.2K S	1
R21	PQ4R10XJ182	1.8K S	1
R22	PQ4R10XJ182	1.8K S	1
R25	PQ4R10XJ104	100K S	1
R26	PQ4R10XJ104	100K S	1
R27	PQ4R10XJ103	10K S	1
R28	PQ4R10XJ473	47K S	1
R29	PQ4R10XJ221	220 S	1
R30	PQ4R10XJ000	0 S	1
R31	PQ4R10XJ153	15K S	1
R32	PQ4R10XJ153	15K S	1
R33	PQ4R10XJ222	2.2K	1
R34	PQ4R10XJ222	2.2K	1

Ref. No.	Part No.	Value	Pcs/Set
R46	ERDS2TJ470	47	1
R47	PQ4R10XJ4R7	4.7 S	1
R48	PQ4R10XJ101	100 S	1
R49	ERDS2TJ221	220	1
R50	ERDS2TJ470	47	1
JP11	PQ4R10XJ000	0 S	1
JP14	PQ4R10XJ331	330 S	1
JP19	PQ4R10XJ331	330 S	1
JP20	PQ4R10XJ000	0 S	1
JP27	PQ4R10XJ331	330 S	1
		(CAPACITORS)	
C 1	ECQE2E105KZ	1 S	1
C 5	PQCUV1H123MD	0.012	1
C 6	ECEA1HKS2R2	2.2 S	1
C 9	ECEA1CK101	100 S	1
C10	ECEA1HKS100	10 S	1
C11	ECEA1CK101	100 S	1
C12	PQCUV1E333MD	0.033 S	1
C13	PQCUV1E333MD	0.033 S	1
C14	PQCUV1H223KB	0.022	1
C15	ECEA1HKS2R2	2.2 S	1
C16	ECKD2H681KB	680P S	1
C17	ECKD2H681KB	680P S	1
C18	PQCUV1H102J	0.001 S	1
C19	PQCUV1H102J	0.001 S	1
C20	ECEA1CKS100	10 S	1
C21	PQCUV1H103KB	0.01 S	1
C22	ECEA1HKS4R7	4.7 S	1
C23	PQCUV1H102J	0.001 S	1
C24	PQCUV1H102J	0.001 S	1
C25	PQCUV1E333MD	0.033 S	1
C26	ECEA1HKS010	1 S	1
C30	PQCUV1H120JC	12P	1
C34	ECEA0JU471	470	1
C36	PQCUV1H103ZF	0.01	1
C38	PQCUV1H103ZF	0.01	1

MEMO

H (Q)
KXTS10SPW-L4
Printed in Japan

ORDER NO. KM49711210C1
F1

Service Manual

Integrated Telephone System

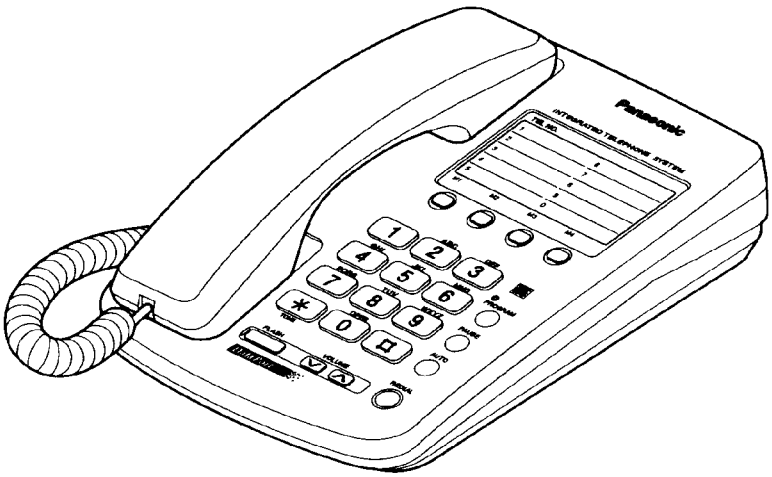
Data Port

Telephone Equipment

KX-TS10-W

White Version

(for U.S.A)



SPECIFICATIONS/ТЕХНИЧЕСКИЕ ХАРАКТЕРИСТИКИ
DISASSEMBLY INSTRUCTIONS/ПОРЯДОК РАЗБОРКИ
CPU DATA/ИНФОРМАЦИЯ О ПРОЦЕССОРЕ
IC BLOCK DIAGRAM/БЛОК-СХЕМА МИКРОСХЕМ
TERMINAL GUIDE OF IC`S, TRANSISTORS AND DIODES/ЦОКОЛЕВКА МИКРОСХЕМ, ТРАНЗИСТОРОВ И ДИОДОВ
OPTION JUMPER TABLE/ТАБЛИЦА ПЕРЕМЫЧЕК
SCHEMATIC DIAGRAM/ПРИНЦИПИАЛЬНАЯ СХЕМА
BLOCK DIAGRAM/БЛОК-СХЕМА
CABINET AND ELECTRICAL PARTS LOCATION/РАСПОЛОЖЕНИЕ ЧАСТЕЙ КОРПУСА И ЭЛЕКТРИЧЕСКИХ ЧАСТЕЙ
ACCESSORIES AND PACKING MATERIALS/ПРИНАДЛЕЖНОСТИ И УПАКОВОЧНЫЕ МАТЕРИАЛЫ
REPLACEMENT PARTS LIST/СПИСОК ЗАПАСНЫХ ЧАСТЕЙ

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■ SPECIFICATIONS

Power Source:	Telephone line voltage
Memory Capacity:	14 telephone numbers, up to 21 digits for each station
Dial Speed:	Tone (DTMF) /Pulse (10 pps)
Redial:	Last dialed telephone number
Pause:	2 sec
Speaker:	Handset; 3 cm ($1^{3}/_{16}$") PM dynamic type receiver unit, 150 Ω
Microphone:	Electret condenser microphone
Dimensions:	$9^{1}/_{4}$"×6 $^{11}/_{16}$"×$3^{5}/_{32}$" (235×170×80 mm)
Weight:	1.59 lbs. (720g)

Design and specifications are subject to change without notice.

DISASSEMBLY INSTRUCTIONSS

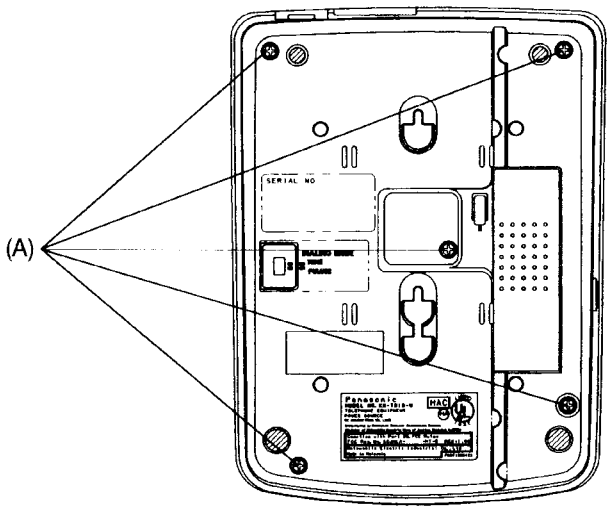


Fig. 1

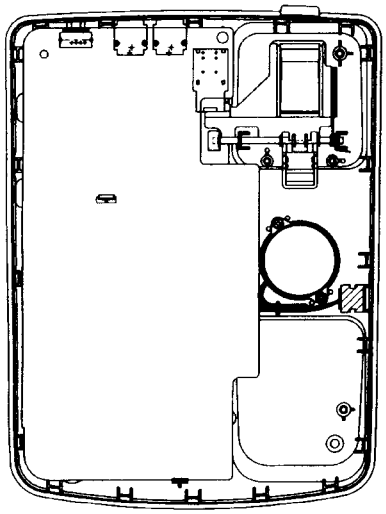
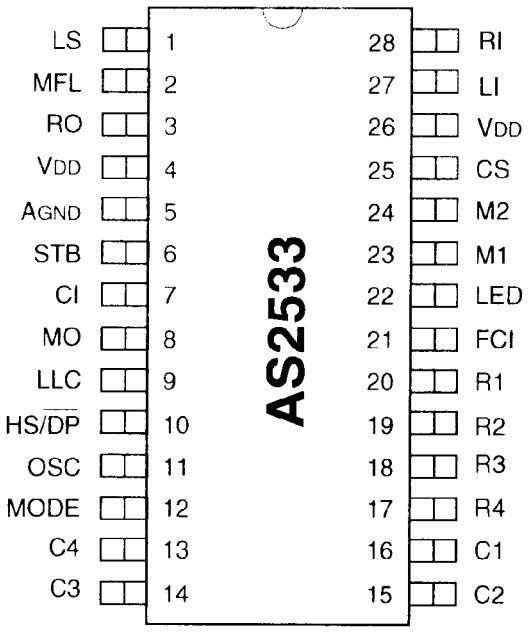


Fig. 2

Ref. No.	Procedure	Shown in Fig.—	To remove—.	Remove—.
1	1	1	Cabinet Cover	Screws (3×12) . . . . . (A)×5
2	1~2	2	Printed Circuit Board	Remove the P.C. Board

CPU DATA

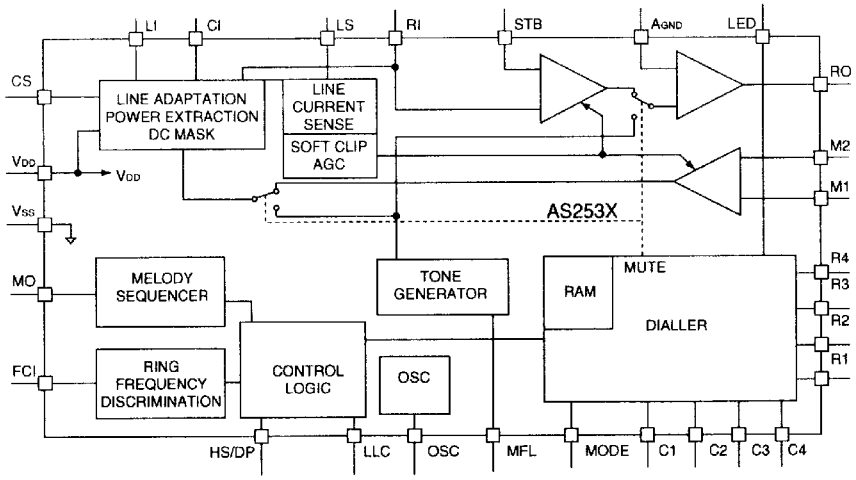


IC1: PQVIAS2533
Memory: 21 digit 14 station
Clock frequency: 3.58MHz
Operating range: 13~100mA

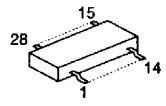
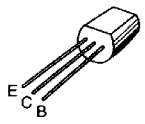
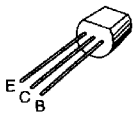
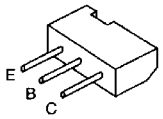
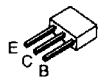
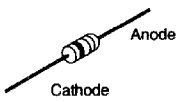
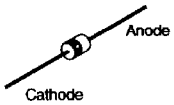
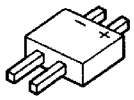
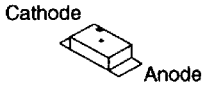
Pin No.	Symbol	Function	Pin No.	Symbol	Function
1	LS	Line Current Sense Input	15	C2	Keyboard Columns
2	MFL	MF Level Setting	16	C1	Keyboard Columns
3	RO	Receive Output	17	R4	Keyboard Rows
4	V_{DD}	Positive Voltage Supply	18	R3	Keyboard Rows
5	A_{GND}	Analogue Ground	19	R2	Keyboard Rows
6	STB	Side Tone Balance input	20	R1	Keyboard Rows
7	CI	Complex Impedance Pin	21	FCI	Frequency Comparator Input
8	MO	Melody Output	22	LED	LED Output Driver
9	LLC	Line Loss Compensation	23	M1	Microphone Inputs
10	HS/DP	Hook Switch Input and Dial Pulse Output	24	M2	Microphone Inputs
11	OSC	Oscillator Input	25	CS	Current Shunt Control Output
12	MODE	Signalling Mode Select Input	26	V_{SS}	Negative Power Supply
13	C4	Keyboard Columns	27	LI	Line Lnput
14	C3	Keyboard Columns	28	RI	Receive Input

<table>
<tr><th>Pin No.</th><th>Description</th></tr>
<tr><td>1</td><td>This is the input for sending the line current.</td></tr>
<tr><td>2</td><td>A voltage divider connected from this pin to A GND and VSS can be uesd to set the DTMF level.</td></tr>
<tr><td>3</td><td>This is the output for driviing a dynamic earpiece with an impedance of 140 to 300 Ω.</td></tr>
<tr><td>4</td><td>This is the supply pin for the circuit.</td></tr>
<tr><td>5</td><td>This is the analog(ue) ground for the amplifiers.</td></tr>
<tr><td>6</td><td>This is the input for side tone cancellation.</td></tr>
<tr><td>7</td><td>For complex impedance a capacitor should be connecded to this pin.</td></tr>
<tr><td>8</td><td>PDM output of the melody generator for tone ringing. Hi-Z when not active.</td></tr>
<tr><td>9</td><td>Select pin for line loss compensation.
LLC = AGND: 20-50 mA LLC = VDD: 45-75 mA LLC = VSS: none.</td></tr>
<tr><td>10</td><td>This is an I/O that is pulled high by the hook switch when off-hook and an open drain pulls</td></tr>
<tr><td></td><td>it low during break periods of pulse of pulse dialing and flash.</td></tr>
<tr><td>11</td><td>Pin for ceramic resonator (3.58 MHz).</td></tr>
<tr><td>12</td><td><table><tr><td>Mode pin</td><td>Function</td></tr><tr><td>Row 2</td><td>mode, 10 pps, 40/60 ms</td></tr></table>
During temporary MF : 82/160 ms</td></tr>
<tr><td>13~16</td><td>(see key arrangement in Schematic Diagram) the scanning to the key.</td></tr>
<tr><td>17~20</td><td>(see key arrangement in Schematic Diagram) the scanning to the key.</td></tr>
<tr><td>21</td><td>This is a Schmitt trigger input for ring frequency discrimination. Disabled during off-hook.</td></tr>
<tr><td>22</td><td>Output for driving an LED that will be flashing when in Programme.</td></tr>
<tr><td>23,24</td><td>Differential inputs for the microphone (electret).</td></tr>
<tr><td>25</td><td>This N-channel open drain output contorols the external high power shunt transistor for the modulation of
the live voltage and for shorting the line during make period of pulse dialing.</td></tr>
<tr><td>27</td><td>This input is used for power extraction and line current sending.</td></tr>
<tr><td>28</td><td>This is the input for the receive signal.</td></tr>
</table>

IC BLOCK DIAGRAM



TERMINAL GUIDE OF IC'S TRANSISTORS ANS DIODES

 PQVIAS2533T	 2SA1625	 PQVT2N6517CA	 2SB1322	 2SC1740S 2SA933
 MA4051, MA4200 MA4300, MA4100	 1SS119	 PQVDA1ZB40F1	 PQVDSML210L	

OPTION JUMPER TABLE

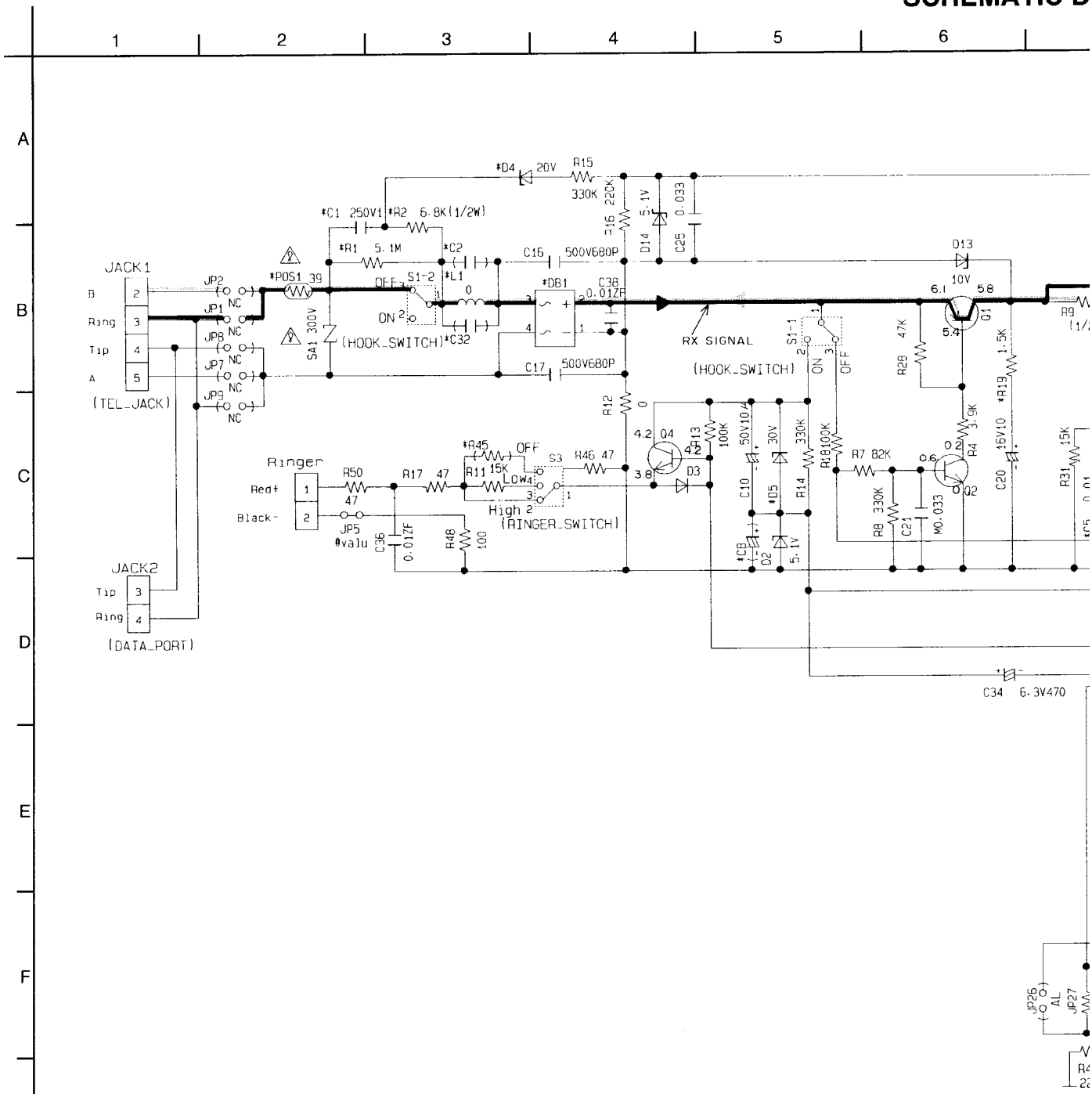
■ DIALING MODE SW

	Function	Option	
PULSE	10pps 33/66ms 10pps 40/60ms 20pps 33/66ms 20pps 40/60ms	JP14 JP23 JP15 JP16	default
TONE	MF 82/82ms MF 82/160ms	JP18 JP19	default

※ Option Jumper uses for 330Ω resistor.

■ FLASH KEY

Flash time	Option	
100 ms	JP20	
270 ms	JP21	
600 ms	JP22	default

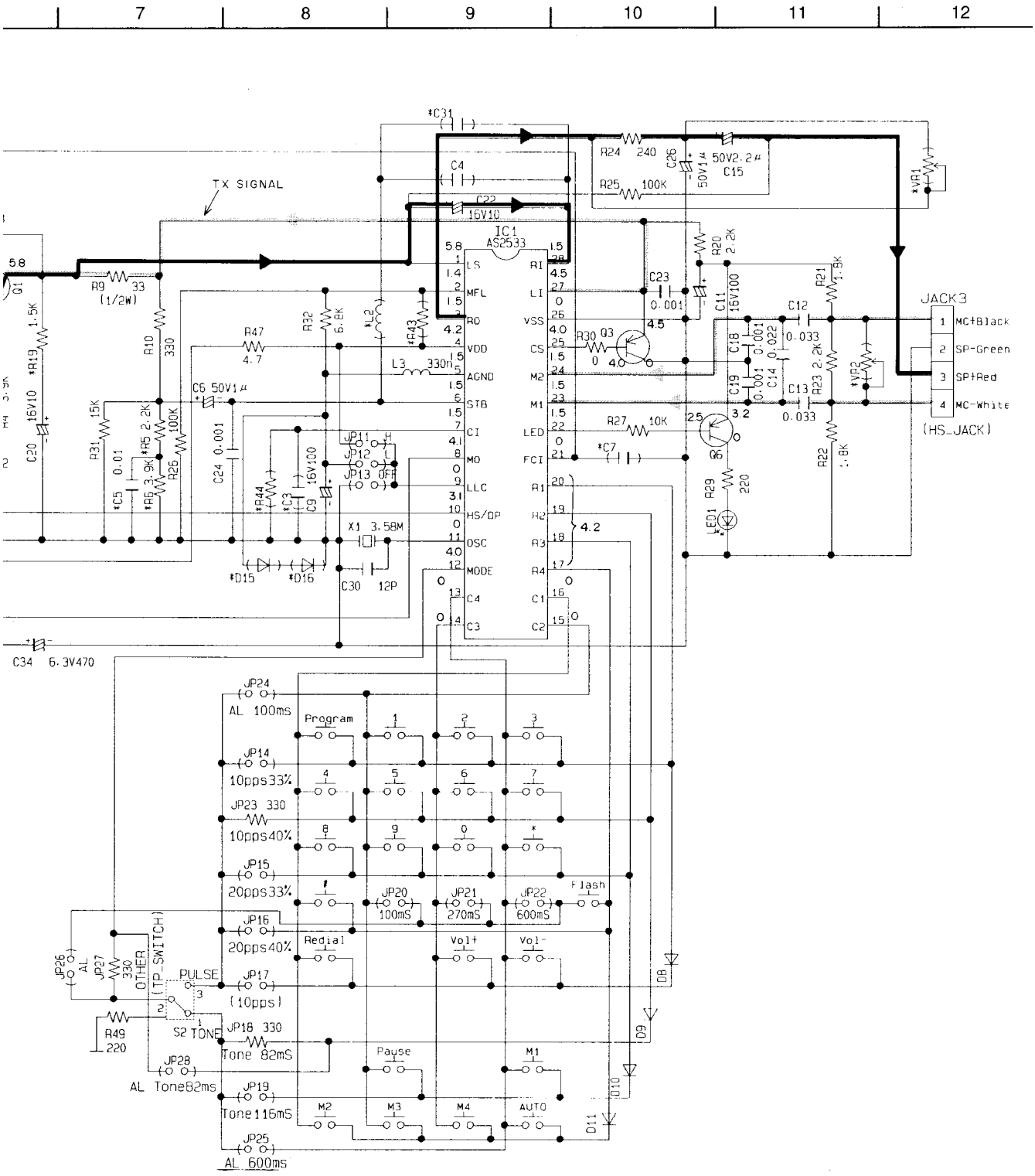


Notes:

1. S1: Hook switch in "OFF-HOOK" position.
2. S2: Dialing mode selector switch in "TONE" position.
3. S3: Ringer volume selector switch in "HIGH" position.
4. DC voltage measurements are taken with electronic voltmeter from negative terminal of battery.
   (Add 40 mA to telephone line from the loop simulator.)
5. This schematic diagram may be modified at any time with the development of new technology.

6. **Important Safety Notice:**
   The shaded area on this schematic diagram incorporates special features important for protection from fire and electrical shock hazards.
   When servicing it is essential that only manufacturer's specified parts be used for the critical components in the shaded areas of the schematic.

EMATIC DIAGRAM



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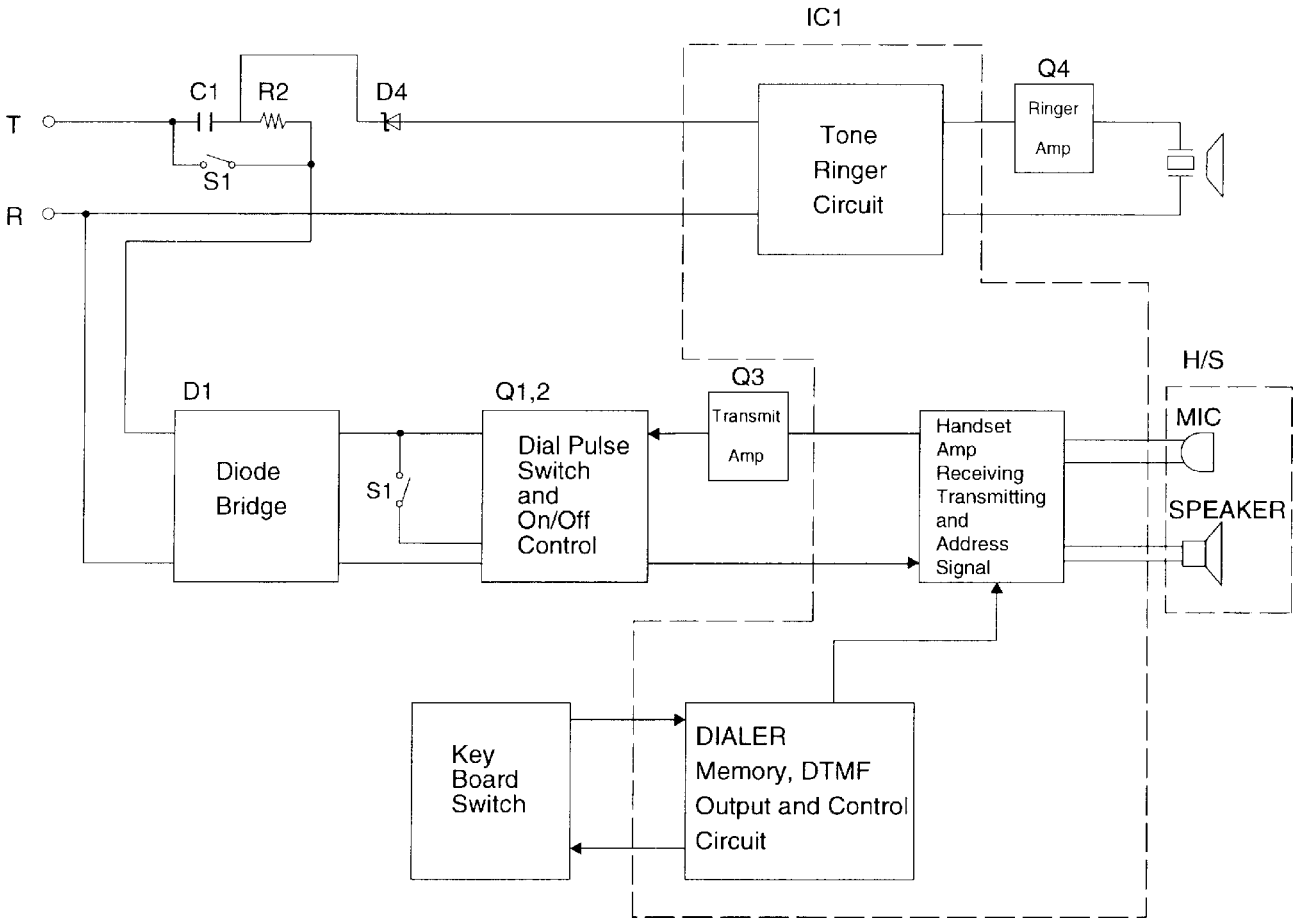
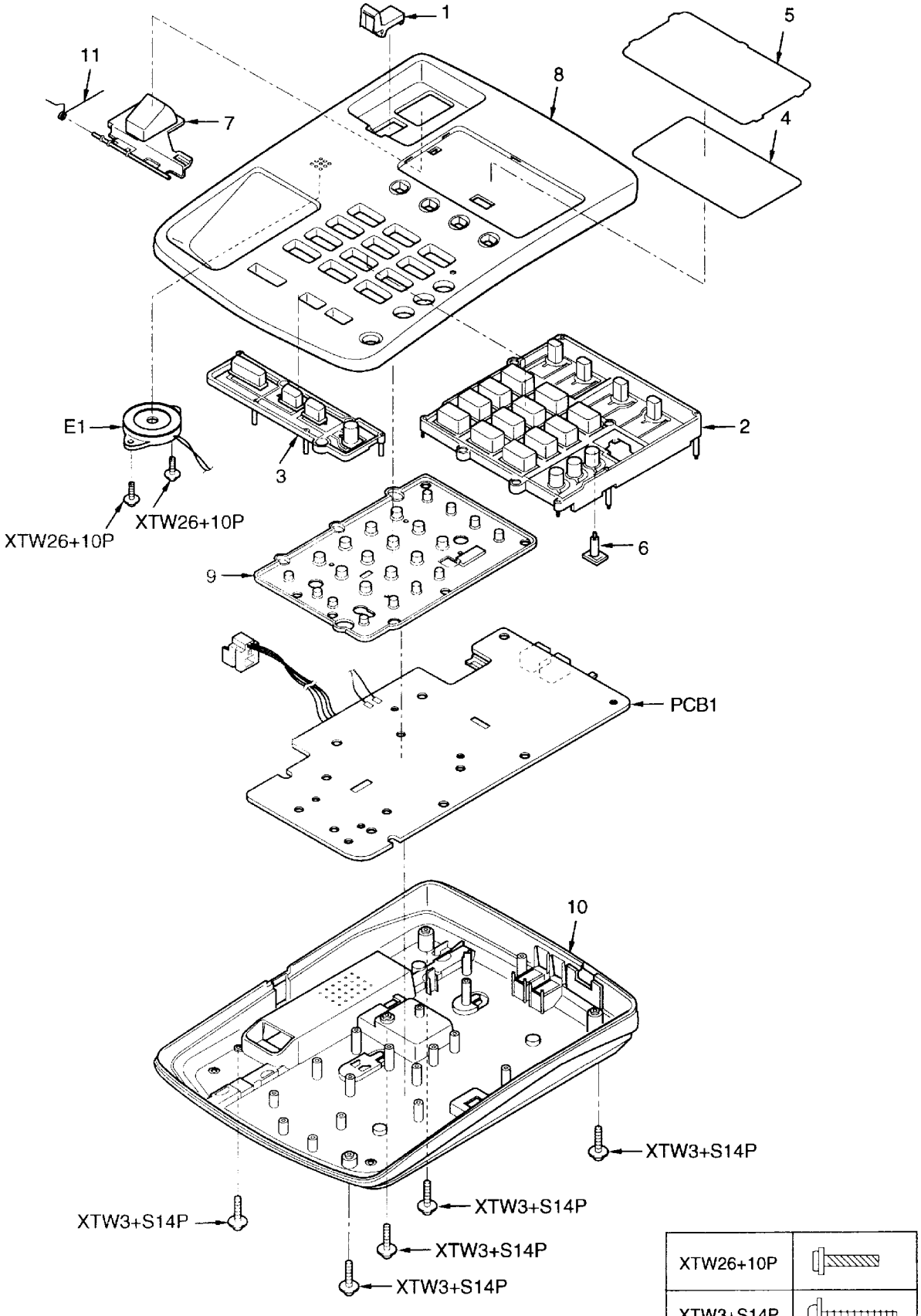
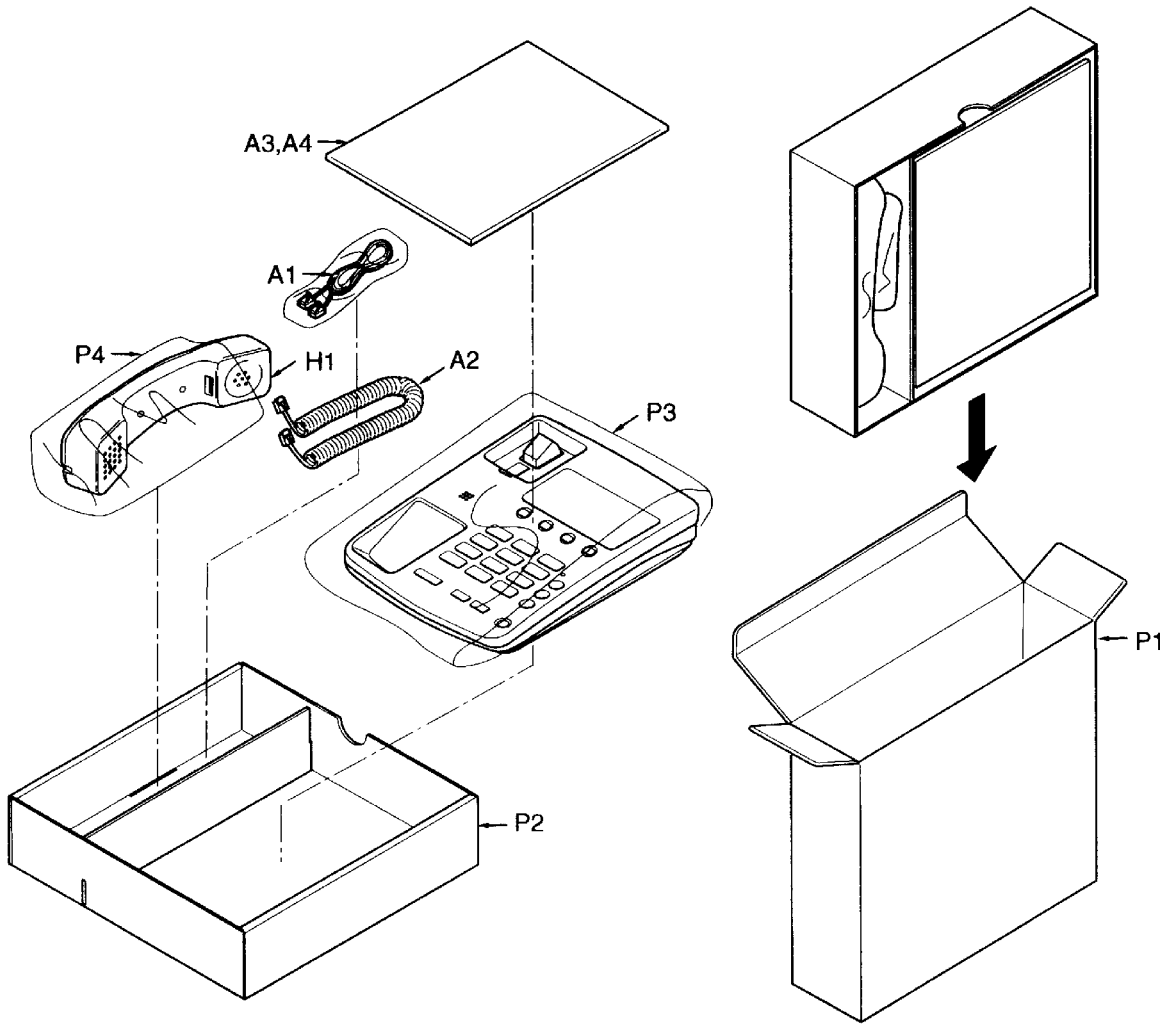
BLOCK DIAGRAM



CABINET AND ELECTRICAL PARTS LOCATION



ACCESSORES AND PACKING MATERIALS



KX-TS10-W

This replacement parts list is U. S. A. version only. Refer to the simplified manual (cover) for Canada or other areas.

REPLACEMENT PARTS LIST

KX-TS10-W

1. RTL (Retention Time Limited)

Note: The marking (RTL) indicates that the Retention Time is limited for this item. After the discontinuation of this assembly in production, the item will continue to be available for a specific period of time. The retention period of availability depends on the type of assembly and the laws govering parts and product retention. At the end of this period, the assembly will no longer be available.

2. Important safety notice

Components identified by the ⚠ mark indicates special characteristics important for safety. When replacing any of these components, only use specified manufacturer's parts.

3. The S mark indicates service standard parts and may differ from production parts.

4. RESISTORS & CAPACITORS

Unless otherwise specified;

All resistors are in ohms (Ω) K=1000Ω, M=1000KΩ

All capacitors are in MICRO FARADS (μF) P=μμF

*Type & Wattage of Resistor

Type

ERC:Solid	ERX:Metal Film	PQ4R:Carbon
ERD:Carbon	ERG:Metal Oxide	ERS:Fusible Resistor
PQRD:Carbon	ER0:Metal Film	ERF:Cement Resistor

Wattage

10,16:1/8W	14,25:1/4W	12:1/2W	1:1W	2:2W	3:3W

*Type & Voltage of Capacitor

Type

ECFD:Semi-Conductor	ECCD,ECKD,ECBT,PQCBC : Ceramic
ECQS:Styrol	ECQE,ECQV,ECQG : Polyester
PQCUV:Chip	ECEA,ECSZ : Electrolytic
ECQMS:Mica	ECQP : Polypropyene

Voltage

ECQ Type	ECQG ECQV Type	ECSZ Type	Others	
1H: 50V	05: 50V	0F:3.15V	0J :6.3V	1V :35V
2A:100V	1:100V	1A:10V	1A :10V	50,1H:50V
2E:250V	2:200V	1V:35V	1C :16V	1J :63V
2H:500V		0J:6.3V	1E,25:25V	2A :100V

Ref. No.	Part No.	Part Name & Description	Pcs/Set
		CABINET & ELECTRICAL PARTS	
1	PQBH10022Z1	BUTTON, HOOK	1
2	PQBX10291Z1	BUTTON, KEY	1
3	PQBX10295Z1	BUTTON, FLASH, VOLUME, REDIAL	1
4	PQGD10149Z	TEL CARD	1
5	PQGV10033Z	TEL CARD COVER	1
6	PQHR10581Z	LED PLATE	1
7	PQKE10069Z1	HANGER	1
8	PQKM10302Z1	UPPER CABINET	1
9	PQSX10067Z	BUTTON, RUBBER	1
10	PQYF10121X1	LOWER CABINET	1
11	PQUS10233Z	SPRING	1

Ref. No.	Part No.	Part Name & Description	Pcs/Set
		ACCESSORIES	
A 1	PQJA10075Z	TELEPHONE LINE CORD	1
A 2	PQJA212M	HANDSET CORD	1
A 3	PQQW11889Z	LEAFLET	1
A 4	PQQX11813Z	INSTRUCTION BOOK	1
H 1	PQJX2PJAL01Z	HANDSET ASS'Y	1
		PACKING MATERIALS	
P 1	PQPK12388Z	GIFT BOX	1
P 2	PQPN10611Z	INNER BOX	1
P 3	PQPP170Z	PROTECTION COVER (for Unit)	1
P 4	PQPP34Z	PROTECTION COVER (for Handset)	1
		MAIN PRINTED CIRCUIT BOARD PARTS	
PCB1	PQWPTS10W	MAIN P.C.BOARD ASS'Y (RTL)	1
		(ICS)	
IC1	PQVIAS2533T	IC	1
		(TRANSISTORS)	
Q 1	2SA1625	TRANSISTOR(SI)	1
Q 2	PQVT2N6517CA	TRANSISTOR(SI)	1
Q 3	2SB1322	TRANSISTOR(SI)	1
Q 4	2SC1740S	TRANSISTOR(SI)	1
Q 6	2SA933	TRANSISTOR(SI)	1
		(DIODES)	
D 2	MA4051	DIODE(SI)	1
D 3	1SS119	DIODE(SI)	1
D 4	MA4200	DIODE(SI)	1
D 5	MA4300	DIODE(SI)	1
D 8	1SS119	DIODE(SI)	1
D 9	1SS119	DIODE(SI)	1
D10	1SS119	DIODE(SI)	1
D11	1SS119	DIODE(SI)	1
D13	MA4100	DIODE(SI)	1
D14	MA4051	DIODE(SI)	1
DB1	PQVDS1ZB40F1	DIODE(SI) S	1
LED1	PQVDSML210L	LED	1
		(COILS)	
L 3	PQLQZMR33K	COIL	1

This replacement parts list is U. S. A. version only. Refer to the simplified manual (cover) for Canada or other areas.

Ref. No.	Part No.	Part Name, Description, & Value		Pcs/Set
		(JACKS)		
JACK1	PQJJ1TA15Z	JACK, LINE	S	1
JACK2	PQJJ1TA15Z	JACK, DATA	S	1
JACK3	PQJJ1TB2Y	JACK, TEL		1
		(SWITCHES)		
S1	PQSH2B103Z	SWITCH, HOOK		1
S2	PQSS2A103Z	SWITCH, DIALING MODE SELECTOR		1
S3	PQSS3A17W	SWITCH, RINGER SELECTOR		1
		(OTHERS)		
POS1	PQRPAR390N	THERMISTOR		1
SA1	PQVDDSS301L	VARISTOR		1
X1	PQVBKBR3.58M	CRYSTAL OSCILLATOR		1
E1	PQEFBPKM34E1	BUZZER		1
		(RESISTORS)		
R 1	ERJ6GEYJ515	5.1M		1
R 2	ERDS1TJ682	6.8K	S	1
R 4	PQ4R10XJ392	3.9K	S	1
R 5	PQ4R10XJ222	2.2K	S	1
R 6	PQ4R10XJ392	3.9K	S	1
R 7	PQ4R10XJ823	82K	S	1
R 8	PQ4R10XJ334	330K	S	1
R 9	ERDS1TJ330	33	S	1
R10	PQ4R10XJ331	330	S	1
R11	PQ4R10XJ153	15K	S	1
R13	PQ4R10XJ104	100K	S	1
R14	PQ4R10XJ334	330K	S	1
R15	PQ4R10XJ334	330K	S	1
R16	PQ4R10XJ224	220K	S	1
R17	PQ4R10XJ470	47	S	1
R18	PQ4R10XJ104	100K	S	1
R19	PQ4R10XJ152	1.5K	S	1
R20	PQ4R10XJ222	2.2K	S	1
R21	PQ4R10XJ182	1.8K	S	1
R22	PQ4R10XJ182	1.8K	S	1
R23	PQ4R10XJ222	2.2K	S	1
R24	PQ4R10XJ241	240	S	1
R25	PQ4R10XJ104	100K	S	1
R26	PQ4R10XJ104	100K	S	1
R27	PQ4R10XJ103	10K	S	1
R28	PQ4R10XJ473	47K	S	1
R29	PQ4R10XJ221	220	S	1
R30	PQ4R10XJ000	0	S	1
R31	PQ4R10XJ153	15K	S	1
R32	PQ4R10XJ682	6.8K	S	1

Ref. No.	Part No.	Value		Pcs/Set
R46	ERDS2TJ470	47		1
R47	PQ4R10XJ4R7	4.7	S	1
R48	PQ4R10XJ101	100	S	1
R49	ERDS2TJ221	220		1
R50	ERDS2TJ470	47		1
JP13	PQ4R10XJ000	0	S	1
JP18	PQ4R10XJ331	330	S	1
JP22	PQ4R10XJ000	0	S	1
JP23	PQ4R10XJ331	330	S	1
JP27	PQ4R10XJ331	330	S	1
		(CAPACITORS)		
C 1	ECQE2E105KZ	1	S	1
C 5	PQCUV1H103KB	0.01		1
C 6	ECEA1HKS010	1	S	1
C 9	ECEA1CK101	100	S	1
C10	ECEA1HKS100	10	S	1
C11	ECEA1CK101	100	S	1
C12	PQCUV1E333MD	0.033	S	1
C13	PQCUV1E333MD	0.033	S	1
C14	PQCUV1H223KB	0.022		1
C15	ECEA1HKS2R2	2.2	S	1
C16	ECKD2H681KB	680P	S	1
C17	ECKD2H681KB	680P	S	1
C18	PQCUV1H102J	0.001	S	1
C19	PQCUV1H102J	0.001	S	1
C20	ECEA1CKS100	10	S	1
C21	PQCUV1E333MD	0.033	S	1
C22	ECEA1CKS100	10	S	1
C23	PQCUV1H102J	0.001	S	1
C24	PQCUV1H102J	0.001	S	1
C25	PQCUV1E333MD	0.033	S	1
C26	ECEA1HKS010	1	S	1
C30	PQCUV1H120JC	12P		1
C34	ECEA0JU471	470		1
C36	PQCUV1H103ZF	0.01		1
C38	PQCUV1H103ZF	0.01		1